**3.3 Chemistry Content Unit Assignment**

**3.3.1 Rationale**

For this assignment, you will examine a specific ***Unit*** from the Senior Chemistry courses (MOE - SCH3U, or SCH4U).This assignment will provide you with ideas and approaches to a particular chemistry unit, as well as an opportunity to test out your ideas within your peer community. You will critically examine the chemistry content of your unit and develop a perspective on the process of unit planning, the selection of teaching and learning strategies appropriate for the content, and the implementation of specific chemistry practices.

**3.3.2 Assignment Overview**

You will work in a group of 3 to 4 to develop the following sections:

* Big Ideas with guiding questions
* Unit Plan of 18-22 seventy-five minute classes
* Minds On activity for the whole unit
* Misconceptions (4-5) for the unit and possible ways to address these
* Two activities, approximately forty-minutes in length
* One STSE series of blog entries
* Lab experiment for classroom carousel.
* Summative Unit Test

This assignment will be submitted to your instructor and posted in our online environment. In addition you will be required to have a 60-70 minute class presentation.

* + 1. **Written Submission**

Part 1 Cover Page

This cover page will outline the various sections of the assignment submission. You will need to include information about the specifics of each component and the names of group members (and what they were responsible for). Included below is a sample table for a cover page which includes due dates for the various sections.

|  |  |  |  |
| --- | --- | --- | --- |
| Unit Plan Title: | | Group Members Names: | |
| Sections | Descriptions (brief) | Member Name | Due Date (TBA) |
| Big Ideas with guiding questions |  |  |  |
| Unit Plan |  |  |  |
| Minds On Activity |  |  |  |
| Misconceptions (4-5) for the unit |  |  |  |
| Activity 1 |  |  |  |
| Activity 2 |  |  |  |
| One STSE series of blog entries |  |  |  |
| Lab experiment for classroom carousel |  |  |  |
| Summative Unit Test |  |  |  |

Part 2 Sections

1. ***Big Ideas with the guiding questions:*** This will be a one page template provide during class, that will help you organize the big ideas for this unit.
2. ***Unit Plan:*** A one page chart that provides the timing and sequence for concepts within the unit, and a paragraph that outlines the rationale for the sequence of lessons and identify the clusters of specific ministry expectations. Opportunities for assessments are indicated.
3. ***Minds On Activity:*** A teacher demonstration or hook to *introduce* the unit.
4. ***Misconceptions:*** Include 4-5 student misconceptions about concepts within this unit, and offer one possible idea for each, that might shift student understanding.
5. ***Activity 1 and 2:*** These activities should be tied into your overall lesson planning sequence. Each activity should be 30-40 minutes in length and written up as using the lesson planning template but aware that this activity *ONLY* represents the *ACTION*  component of the lesson planning template. These activities should in student handouts in ‘ready-to-use’ form with answers. This means that any teacher could implement this activity in your absence (include complete instructions and any written/handouts for implementation).
6. ***STSE Series of Blog Activity:*** You will design an STSE activity where the product will be a blog. This activity will be something your own peers will engage in. The posting of the blogs will be scheduled over the course of the calendar year (TBD). Every member of the group should have one blog entry. This activity should have a one page summary that includes ministry expectations, the source of any ideas and pedagogical (teacher) notes for delivery and implementation, including a timeline and connection to the lesson plan overview. An appropriate assessment rubric or rating scale should be included (prior to first blog entry). The blog series should include one video, and one audio component.
7. ***Lab Experiment:*** You will select and implement one lab activity for one seventy-five minute class period. The information will be shared with your peers in a carousel format. The following chart is provided as a guideline for this section of the assignment.

|  |  |  |
| --- | --- | --- |
| ***Placement in the Course, Teacher Knowledge Skills and Preparation Needed*** | ***Laboratory Set-up and Diagram*** | ***Student Resources*** |
| Explain where and why this lab should be placed in the overall unit plan, and how it fits with the ”Big Ideas” for the chemistry unit. | Assume that the experiment will be done in Room 322 or other lab classroom space with 24 students. Describe, including a diagram, how the distribution and collection of materials and chemicals will take place and where the students should work. | What will you ask the students to do the night before the experiment? Include BLMs if appropriate. (e.g., questions about particle theory related to gas laws) or any pre-lab questions, data charts to prepare… |
| State the appropriate background knowledge the teacher should know (content knowledge, skills and safety issues). | Create a protocol list for the ‘must do’ prior the lab with respect to experiment. (i.e., preparation of solutions, exactly how many of each type of equipment required). | Produce a ready to use set of instructions (handout) that will allow the students to perform this experiment. Include title, purpose, materials, apparatus, diagrams, procedure, safety warnings, and directions for how to record observations or an observation chart/data table. Keep in mind that this will be used as a BLM. |
| Include a sample set of data for any observations students might make while carrying out the lab. | ***Assessment / Evaluation of Student Achievement*** | Provide 4 to 6 questions (as BLM) relating directly to the experiment for the students to answer. Be sure to include a variety of cognitive levels in your questioning. |
| Provide answers to any of the pre-lab and post-lab questions. (from BLM) | What strategies will you use for this experiment? Describe why, how, and when you will implement these strategies. Include as BLMs, the assessment tools you will use (considering AaL, AoL, and AfL) |  |

1. ***Summative Unit Test***: Two copies of the unit test are required. The unit test should be submitted in ready-to-use format and should be designed to take about an hour to complete. A second copy of the test should be submitted with suggested answers and a marking scheme with a check mark for each mark and category.

*Unit Test Analysis*

* *Include a chart with written* Ministry expectations for your unit and place the number of your test question beside the expectation(s) that it assesses.
* Complete a chart for your test similar to the one that follows.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Test Question number | Question Type | Achievement chart | | | |
| Knowledge and Understanding | Thinking and Inquiry | Communication | Application |
| e.g. 1 | Multiple choice | √ 1 |  |  | √ 1 |
| e.g. 5 | Short answer |  | √ 4 | √ 3 |  |
| e.g. 12 | Diagram | √ 5 |  |  |  |
| Total Marks |  | 6 | 4 | 3 | 1 |

**Grading of this Assignment**

See the accompanying rating scale(s).

3.3.5 Rating Scale for Chemistry Content Unit Assignment

# **NAMES** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |  |
| --- | --- | --- | --- |
| **Sections of Assignment** | **DESCRIPTION OF CRITERIA** | | **POINTS** |
| Cover Page | Present or Not | |  |
| Big Ideas | Clearly stated big ideas, with guiding questions using the template. | | /5 |
| Unit Plan Overview | Lesson planning sequence of the unit was logical and easy to follow. Evidence was provided for the clustering of expectations, and the rationale for timing and sequence of concepts were described. Opportunities for assessments were indicated and appropriate. | | /5 |
| Minds On Activity | Demonstration or hook was engaging and motivating for student learning and understanding of concepts within unit. | | /10 |
| Misconceptions | Misconceptions are described and possible ways to alleviate these are outlined. | | /10 |
| Activity 1 | Resource was of high quality and creative, at an appropriate grade level, and included appropriate course content. Using the Lesson Plan Template, this activity is well detailed with respect appropriate sections. Be sure to include sources of any ideas and pedagogical (teacher) notes for delivery and implementation. | | /25 |
| Activity 2 | Resource was of high quality and creative, at an appropriate grade level, and included appropriate course content. Using the Lesson Plan Template, this activity is well detailed with respect appropriate sections. Be sure to include sources of any ideas and pedagogical (teacher) notes for delivery and implementation. | | /25 |
| STSE Series of Blogs | Resource was of high quality, showed creativity, at an appropriate grade level and included appropriate course content. The series of blogs are designed to incorporate STSE aspects. The activity has a summary page, with specific ministry expectations addressed, the source of any ideas and pedagogical (teacher) notes for delivery and implementation, including a timeline and connection to the lesson plan overview.  The actual product was included illustrating ‘own view(s) or action’. An appropriate assessment rubric or rating scale was included. | | /20 |
| **Lab Experiment** | Big Ideas” for the chemistry unit were provided and a detailed description of teachers’ background knowledge and outline of lab experiment (theory to practice) was documented.  A sample set of data for any observations students and answers to pre-post-lab questions was clear and logical. A drawing of how distribution and collection of materials and chemicals was taking place was clear and logical, and included where the students should work. A detailed protocol list was created for the ‘must do’ prior the lab with respect to experiment. A well documented ready-to-use set of instructions (handout or BLM) for students (e.g., all lab instructions, safety considerations charts). 4-6 questions were well written (as BLM) relating directly to the experiment at appropriate cognitive level.  Assessment of activity provided that considered AoL, AfL, and AaL features. | | /50 |
| **Summative Unit Test** | | | |
| Variety | The test has a judicious variety of question types as documented by your unit test analysis. | /3 | |
| Coverage | Test addresses as many as of the expectations as is reasonable. Expectations clearly marked indicating a balance and cohesive understanding of various categories on the achievement chart. | /10 | |
| Clarity and Creativity | The test questions are clear and creative, easy to interpret. | /2 | |
| Answer key | An answer key with expected answers and marks allotted is provided and correct. | /5 | |
|  | | | |
| Overall | The cover page is complete and clear. Resources are well-written, free of error and engaging and are all posted on the wiki by (Due Date TBA) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | /10 | |
|  | | | |
| **Total** |  | **/180** | |

Comments: